Modeling the economic consequences of indicator based treatment strategies against subclinical and clinical mastitis

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Mastitis is costly for the dairy herd. Dairy farmers are adopting new technologies for dynamic monitoring of the mastitis status of the individual cow. As these systems provide routinely and more detailed information about subclinical infections it becomes a management issue, how to optimize mastitis treatment strategies accordingly. The aim of the study was to develop a model for simulating the economic consequences of indicator based treatment strategies against subclinical and clinical mastitis. Recent contributions in simulation of mastitis in a dairy herd include differentiation of pathogens, modeling the pathogen specific transmission dynamics, differentiation of clinical and subclinical mastitis, differentiation of the infection and the treatment and differentiation of types of treatment. The contribution of this study was to combine these characteristics in one model and to model detailed treatment criteria according to cow characteristics and alarms for infections. The model was implemented in the mechanistic, dynamic and stochastic SimHerd model. The treatments criteria included clinical signs, result from bacteriology or PCR, somatic cell count in the milk, lactation stage and the milk yield level of the cow. The different types of treatment included intramammary and intramuscular antibiotics and no treatment. The model was parameterized according to the literature and new experiments. A recent Danish study showed penicillin treatment of subclinical *S. aureus* mastitis had a beneficial effect on infection load (bacteriological cure), inflammatory status (somatic cell count and lactate dehydrogenase) and milk yield (MSc thesis of Duse and Albrechtsen, 2011). The new mastitis model was implemented in the SimHerd model and scenarios were simulated for combinations of treatment criteria and treatment types. Results for the technical and economic consequences of these scenarios in different dairy herds will be presented.